

Abstract

Disclosed is a high temperature, high performance lead-free solder alloy comprising effective amounts of tin, copper, silver, bismuth, and antimony and having a liquidus temperature above 215°C. More particularly, several lead-free solder alloys are disclosed that comprise about (i) at least about 90% Sn, 0.2 to 5.0% Cu, 0.05 to 5.0% Bi; or (ii) at least about 75% Sn, 0.5 to 7.0% Cu, 0.05 to 18% Sb; or (iii) at least about 67% Sn, 3 to 15% Ag, 0.01 to 18% Sb; (iv) at least about 78% Sn, 0.8 to 7.0% Cu, 4 to 15% Ag; (v) at least about 96% Sn, and at least one of 0.01 to 2.0% Ni, and 0.01 to 2.0% Co; (vi) at least about 90% Sn, 0.05 to 5.0% Bi, and 0 to 5.0% Sb; and (vii) at least about 90% Sn, 0.2 to 0.9% Cu, and 0.1 to 5.0% Bi.

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